UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

JUL 18 2006

MEMORANDUM

SUBJECT: Regional Response to National Remedy Review Board Recommendations
Cherokee County Superfund Site, Cherokee County, Kansas

FROM: Cecilia Tapia, Director
Superfund Division, U.S. EPA, Region 7

TO: David Cooper, Chair
National Remedy Review Board, U.S. EPA Headquarters

Region 7 (the Region) of the U.S. Environmental Protection Agency appreciates the recent review and subsequent recommendations provided by the National Remedy Review Board (NRRB) on the draft Proposed Plan for a Record of Decision (ROD) Amendment at the Baxter Springs and Treece subsites of the Cherokee County Superfund site. We realize that the primary goals of the NRRB process are to ensure the cost-effective use of resources and to promote national consistency between regions. We believe our decision document has greatly benefited from the NRRB process and offer the following responses to the final recommendations dated July 13, 2006. Please contact Dave Drake or Emily Kaulbach of the Federal Facility and Special Emphasis Branch of the Region's Superfund Division if you have any questions or require additional information.

U.S. EPA Region 7 Responses to NRRB Advisory Recommendations

The following responses are numerically matched to the final NRRB advisory recommendations. The NRRB recommendations are also provided for ease of reviewing the responses.

1. The package presented to the Board indicated that the remedial criterion for addressing surficial, non-residential mining wastes is the visual presence of contaminated materials. However, at the meeting, the Region indicated that the concentration-based preliminary remediation goals (PRGs) presented in the package are also intended to serve as action and/or cleanup levels. The Board encourages the use of these numerical levels to trigger action and define when cleanup objectives have been achieved and recommends that they be described in the decisions documents for the site. In addition, the Board recommends that the decision documents explain how the Region intends to decide which waste piles will be removed and which will be capped in place.

Response: The Region agrees with the NRRB recommendation to include numerical cleanup levels for the surficial non residential mine waste in the Proposed Plan. The Region has developed numerical cleanup standards and incorporated these standards into the Proposed Plan. Additionally, the Region agrees with the recommendation of the NRRB to include an explanation of how the Region intends to decide which mine wastes will be excavated and consolidated or capped in-place; this information has been added to the Proposed Plan.

2. The package presented to the Board does not include an array of remedial alternatives (including the no-action alternative) as is typically provided. Instead, it identifies only the Region's preferred remedy. Consequently, the Board is unable to evaluate whether the various actions that comprise the proposed remedy represent the most cost-effective solution. During the meeting, the Region indicated that its remedial preference is based on experiences gained in connection with prior actions taken in the tri-state mining area. The Board recommends that the decision documents evaluate other alternatives, including a no-action alternative. Further, the Board recommends that the decision documents discuss lessons learned from the Region's experiences in addressing other contaminant sources and how they led to the development of the various remedial components, as well as the preferred alternative. This discussion should clearly compare the various remedy components and alternatives in terms of the NCP nine criteria and explain why the selected remedy is preferred.

Response: The Region agrees with the recommendation of the NRRB to include an explanation of how previous remedial experiences led the Region to develop its Preferred Alternative. This discussion has been added to the Proposed Plan. Historically, the Region evaluated several (approximately 20) alternatives and arrived at the approach outlined in the original ROD for the Baxter Springs and Treece subsites. The current Proposed Plan is for an amendment to the 1997 ROD and is intended to implement actions from the original ROD, with minor modifications, in geographic areas not addressed as part of the earlier remedial actions. Thus, the Region did not intend to re-evaluate the many prior remedial options that were evaluated during the earlier remedy selection process.

3. The information presented to the Board indicates that chat sales may be included as part of the remedy. The Region did not indicate whether guidance or fact sheets were available to chat sellers or purchasers on safe chat use or whether these fact sheets are sufficient to ensure that these sales do not cause additional contamination that could lead to future cleanup actions. The Board recommends that the Region, in coordination with Region 6 as appropriate, explore and implement options for ensuring safe chat sales.

Response: The Region agrees with the statement of the NRRB that chat sales should not "cause additional contamination that could lead to future cleanup actions." The Region has widely distributed a mine waste fact sheet in the past and has coordinated with Region 6 on this topic. In the future, the Region plans on meeting individually with chat owners to discuss responsible chat sales and again provide them with the Region 7 fact

sheet on mine waste, as well as, information on the upcoming chat rule. The Region will also encourage any appropriate state and local programs to be involved in ensuring environmentally safe chat sales. Finally, as requested by the NRRB, the Region will continue to coordinate with adjacent Region 6 on responsible chat sales.

4. The cost information presented in the package to the Board is based upon unit costs and volume estimates used to prepare the 1997 Record of Decision (ROD). The total costs from the ROD were modified to adjust for inflation to represent 2006 dollars. It does not appear that further adjustments to the total cost were made based on lessons learned from recent cleanup efforts in the tri-state mining area (e.g., different capping materials, disposal in mine openings, operation and maintenance improvements). In addition, it was not clear to the Board whether the cost estimate included monitoring to ensure the effectiveness of the selected remedy. The Board recommends that the Region revisit the total cost estimate in more detail and provide additional supporting documentation in the record.

Response: The Region has revised the cost estimate based on actual remedial costs incurred during the recent remedial action at the Baxter Springs subsite. Additionally, further adjustments were made based on lessons learned and updated volume information for the commercial mine waste piles. Moreover, the state of Kansas has conducted an independent cost estimate and arrived at a remedy cost similar to the Region's estimate. The state also conducted a peer review of the Region's cost estimate and was in agreement with our cost.

5. The package presented to the Board does not include a clear description of the purpose of the proposed cap components (e.g., decrease infiltration to ground water, stabilize waste piles, prevent exposure, support revegetation) or a clear rationale for the thicknesses which are proposed. Various purposes and thicknesses for the cap material were presented to the Board during the oral presentation; however, the Board was not able to evaluate the cost-effectiveness of the Region's proposed cap (e.g., relating to the proposed use of clay versus common fill) or the proposed use of topsoil as opposed to amended soil material (i.e. soil mixed with biosolids). The Board recommends that the decision documents present an analysis of cap materials, including their purpose and the cost associated with placement of these materials, in order to ensure that cap selections are cost-effective.

Response: The Region agrees with the NRRB that a more detailed explanation of the cap, its materials and purposes, would be beneficial and has included this information in the Proposed Plan. Additionally, the Region has obtained actual cost data for the components of the cap and has included this information.

6. In the package presented to the Board, some of the draft Remedial Action Objectives (RAOs) are inconsistent with EPA policy (e.g., reference to secondary drinking water standards) or do not appear to be related to the proposed remedy (e.g., preventing discharge of contaminated groundwater). The Board recommends that the Region revise the proposed RAOs to reflect EPA guidance, including media, contaminants of concern,

exposure routes and receptors, and remediation goals (See EPA's RI/FS guidance (EPA 1988) and sediment guidance (EPA 2005)). The Board recommends that the Region develop separate RAOs for soils and source materials and add RAO(s) for ecological risk pathways consistent with the revised ecological risk assessment and contaminant pathway analysis (see comments 11 and 13).

Response: The Region agrees with the NRRB that the proposed RAOs require revision and has implemented the suggested changes in the Proposed Plan. Inconsistent and unrelated RAOs have been removed, separate RAOs for soils and source materials have been established, and ecological risk pathways have been addressed. Relevant guidance was consulted as recommended.

7. The package presented to the Board states that "the principal threat wastes at the subsites consist of mining wastes and mining impacted sediments" and includes all the mining wastes and mining impacted sediments in its estimated volume of principal threat wastes. As defined in *A Guide to Principal Threat and Low Level Threat Wastes* (OSWER Fact Sheet 9380.3-06FS, 1991), principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The wastes being addressed under this proposed decision generally do not appear to meet this definition. The Board recommends that the Region re-evaluate its description of principal threat wastes at the site and incorporate a revised description in decision documents.

Response: The Region agrees with the recommendation of the NRRB and has re-evaluated the description of principal threat wastes at the subsites. The new determination, that none of the mine waste is principal threat waste, has been reflected in the Proposed Plan.

8. The package presented to the Board indicates the 1997 ROD included a waiver of surface water quality standards based on technical impracticability (TI), but that the Region expects to meet this applicable or relevant and appropriate requirement (ARAR) for this phase of the cleanup. The Board recommends the decision documents include a clear discussion explaining this change in approach (e.g., basis for determining how it is now technically practicable to meet the State's water quality standards) and its impact on cost. In particular, the Board recommends that the Region describe how the surface water quality goal can be attained without cleanup of the upper aquifer. In addition, the ARARs discussion in the package identifies a number of items that do not appear to be ARARs (e.g., secondary MCLs, various Executive Orders, NRD assessment). The Region should coordinate with Headquarters to ensure that the ARARs discussion provided in the decision documents for the site is consistent with Superfund guidance.

Response: The Region agrees with the NRRB that the Proposed Plan would benefit from a clear explanation of why the Region feels it can now meet the surface water chemical-specific ARARs when it previously waived them under a TI waiver. Such a discussion has been included in the document and centers on relatively recent scientific studies.

These studies indicate that the primary contribution to surface water degradation at the Baxter Springs and Treece subsites is from the leaching and weathering of surficial mine waste. The removal or remediation of this waste is expected to result in significant surface water improvements. Also, as expanded upon in the Proposed Plan, historically there appears to be minimal interaction between the shallow aquifer groundwater and Tar Creek and its tributaries. Additionally, the Region agrees with the NRRB that the ARARs discussion is poorly organized and has revised and reorganized this information and the associated table. The Region has consulted with Headquarters, as requested, in addressing this comment and working out changes to the Proposed Plan.

9. In the package presented to the Board, Modified Alternative 8A will adopt previously selected institutional controls (ICs) that were intended to address numerous elements of the remedy. Information presented to the Board indicates that some ICs may not yet have been implemented and/or are not successful at preventing inappropriate residential development. The Board recommends that, to the extent possible at this stage of the remedial action, the Region implement ICs and explore potential methods to increase their effectiveness. The Board also recommends that the decision documents include a description of any new effectiveness measures for existing ICs as well as a description of any additional ICs that will be put in place (e.g., State easement program for cap protection) and how their effectiveness will be assured.

Response: The Region agrees with the NRRB input and has augmented the current IC approach by adding state of Kansas environmental use controls as a potential solution. Additionally, the Region will continue to explore options for IC implementation and effectiveness.

10. The Region has recommended subaqueous placement in subsidence structures as a potential remedial action for some of the mining waste. The Board notes that the physical characteristics of the wastes have been altered by mining and processing operations and that subaqueous placement will introduce the wastes to a different geochemical environment (e.g., pH, redox potential) that may alter contaminant mobility and toxicity. The Board notes that the studies that the Region has performed on the use of this method for dealing with mine waste are not conclusive as to the impacts that potential enhanced contaminant migration could have on the overall success of the remedy. Of particular concern is the contribution of contaminated groundwater to the surface water and sediment problems. The Board recommends that the subaqueous placement of mine waste be further studied prior to full implementation as a remedial alternative. The Board recommends that these studies investigate how these changes will impact contaminant migration and risk. This evaluation should focus not only on the contaminants of concern (lead, cadmium, zinc), but also other metals that could be mobilized.

Response: The Region agrees with the NRRB that subaqueous disposal of mine waste and its effect on groundwater should be further studied, and plans to do so at the subsites. The Region has approached an EPA laboratory regarding the performance of a technical review of the studies conducted to date and has received preliminary input that the technical evaluation may begin shortly.

11. The package presented to the Board presents new ecological risk information along with ecological risk information that supported the existing ROD. This information leads to potentially conflicting estimates of ecological risks for soils and sediments present at these OUs. The Board recommends that the Region consider whether the new information warrants revision to the ecological RAOs. The Board also recommends that ranges for remediation goals be developed to address the ecological risks, consistent with *Ecological Risk Assessment and Risk Management Principles for Superfund Sites* (OSWER Directive 9285.7-28P, October 1999). In addition, the Board recommends that the decision documents summarize and integrate the new information and clarify the basis for the development of the remedial action objectives and conceptual site model (see following comment for additional recommendations regarding sediments).

Response: The Region agrees with the NRRB input and has made many changes to the decision document. Ecological RAO language has been modified, ranges of RGs for ecological risks have been developed, and the new scientific ecological data and information have been summarized and integrated in a clearer format.

12. The package presented to the Board did not include a range of risk-based, site-specific, protective Remediation Goals (RGs) for sediment, from which a cleanup level could be selected by balancing the National Contingency Plan's remedy selection criteria. The "MacDonald" values included in the package are literature-based sediment values typically used for screening. The use of screening levels as cleanup levels can lead to more extensive and expensive cleanup than needed to protect environmental receptors, depending on the site-specific situation. The Board notes that the MacDonald values would more properly be considered for the lower boundary of a yet-to-be-developed range of site-specific RGs, which would also allow flexibility should Endangered Species Act issues arise. It was stated in the presentation to the Board that the results of the Tri-State Watershed Framework, inclusive of OU2 (Spring River, which is outside the scope of this action), should provide the needed data to generate a site-specific range of RGs that could apply to both sediment portions of OU 4 (Treece) and OU2. Therefore, the Board recommends that the selection of cleanup levels be delayed until those data are analyzed. The Board recommends that the Region consider including remedy decisions for the sediment portion of OU4 in the later OU2 ROD.

Response: The Region agrees with the NRRB that the selection of cleanup levels for sediment should be delayed. The proposed sediment remediation component of the remedy has been removed and deferred to a future decision document. However, it should be noted that recent regional ecological risk assessments and decision documents, as well as risk assessments and decision documents at other non-Region 7 sites, have determined that MacDonald's threshold effects concentration (TEC) values are appropriate as RGs.

13. In the preferred remedy, the Region proposes remedial actions that will result in remediation of surface water quality. However, the package presented to the Board did not present enough information to understand to what degree various media (surface wastes, subaqueous placed wastes, contaminated sediments) and migration pathways (overland flow, ground water discharge) contribute to the exceedance of water quality standards/criteria and risk to aquatic life. For example, remediation of contaminated ground water in the shallow aquifer is considered impracticable, and contaminated ground water will continue to discharge to local streams, but the impact of that load on surface water quality is unclear. The Board recommends that the Region evaluate contaminant loading pathways to stream systems and determine the impact of these potential loading pathways on the success of the proposed remediation activities.

Response: The Region agrees with the NRRB that expected contributions of various media and pathways were not fully outlined in the site package. The Proposed Plan has been updated with additional clarifying information.

14. In the package presented to the Board, the proposed ecological risk-based cleanup levels for soil exceed those proposed for sediment by an order of magnitude. The Board recommends that the Region consider how soils in areas with contaminant pathways to surface water may affect the achievement of remedial goals for sediment and surface water and include a discussion in the decision documents to explain how the proposed cleanup levels are expected to be protective.

Response: The Region agrees with the NRRB input and has added new information to the Proposed Plan to address these comments. We conducted an updated ecological PRG assessment and developed a range of cleanup numbers for soils, mine waste, and sediments. This assessment considers the question of contribution to sediments. However, we have elected to remove the sediment work from this decision document, as discussed in a prior response, and are thus not currently proposing sediment criteria. The soil and mine waste cleanup ranges and numbers resulting from the new ecological update have been incorporated into the Proposed Plan and the ecological PRG assessment has been added to the administrative record. Additionally, development of the updated ecological PRG work product has been coordinated with select NRRB member input/review.

15. The Board believes that, in general, approaches to cleaning up all NPL sites within the Tri-State Mining District should be consistent with respect to chat usage, remedial action objectives, and cleanup levels. The Board encourages Region 6 and 7 to continue to work closely together and with the affected States to address potential inconsistencies as part of their ongoing coordination efforts.

Response: The Region believes that the Region 6 and 7 approaches to cleaning up the Tri-State Mining District sites are consistent. As an example, both Regions have prioritized and nearly completed all residential work in the Tri-State Mining District and are now focusing on surficial non-residential mine waste. Both Regions encourage appropriate chat usage, have developed and distributed similar mine waste fact sheets,

and support the chat use rule in the Federal Registrar. Both Regions and all three of the affected states (Kansas, Oklahoma, and Missouri) are working jointly on a uniform watershed characterization approach in addition to the joint efforts of state and federal trustees on natural resource damage issues. The Region is unaware of any material differences in addressing the Tri-State Mining District mine waste between Region 6 and Region 7.